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Procedia Computer Science 3 (2011) 1199–1204

**Procedia
Computer
Science**www.elsevier.com/locate/procedia

WCIT-2010

Challenges of EHR Implementation and Related Guidelines in Isfahan

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Abstract

Introduction: Today, eHealth is base of health services around the world, and electronic health records as an essential core element and its basic architecture for telehealth is considered. EHR offers many potential opportunities for healthcare systems we must focus on its challenges and related guidelines but for EHR deployment. The purpose of this paper is exploration challenges of EHR implementation and related guidelines in Isfahan. **Methods:** This is a qualitative study and we used the method of phenomenology, a in-depth semi-structured interviews were conducted with 15 of Physicians, Managers and Clear Sighted persons who had experiences regarding with electronic health record. **Conclusion:** The researcher divided challenges into two areas of infrastructure and structural. Challenges of electronic health records infrastructure are due to information technology, lack of uniform definitions and concepts, cultural problems, and lack of needs assessment before implementation and the challenges of structural are due to instability enforced, violations of privacy and legal cases, compromise getting information management, and lack of integration and sharing of enterprise-level.

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Selection and/or peer-review under responsibility of the Guest Editor.

Keywords: Challenges; Electronic Health Record; Isfahan

1. Introduction

Today, eHealth is base of health services around the world, and electronic health records as an essential core element [1] and its basic architecture for telehealth is considered[2]. The concept of computerization of medical records was introduced about 30 years ago under different names, such as electronic medical records, computerized medical records, electronic records and other names. Vision of electronic health records are not fixed in different communities as well as its opportunities and challenges to be considered. Electronic health record briefly support the possibility of integration of patient data, clinical decision support, online data entry by clinicians, access to knowledge resources and multiple information needs of users while designing interface engines, develop the necessary standards, legal and social issues, costs, and leadership and management, including the challenges ahead in its application that must be considered[3].

Some institutions/countries are currently planning the introduction of a nationwide electronic health record while others have actually implemented some form of EHR. However, the type and extent of electronic health records vary and what one country calls an EHR may not be the same as that developed in another country. Although work has been undertaken by institutions/countries on some form of a computerized patient healthcare information system, as yet

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not many hospitals have successfully introduced an electronic health record with clinical data entry at the point of care[3].

In addition to the above, resistance by some medical practitioners and health professionals generally to a change from manual to electronic documentation may be a problem in both developed and developing countries. Most health administrators and information managers are aware that it may take time to change or at least modify health practitioner behavior and attitudes. The reason for wanting to change to an electronic system is important. The vision of the EHR is not fixed. This is both its challenge and its strength in different communities[1]. Therefore, the researcher tried to investigate the challenges resulting from the introduction and implementation of electronic health records and related guidelines from the perspective of custodians and clear-sighted persons.

2. Methods

The current study is done using a qualitative method in Isfahan in 2010. In this study the method of phenomenology was used. Thus, in-depth semi-structured interviews were conducted with 15 of Physicians, Managers and Clear Sighted persons who had experiences regarding with electronic health record. Snowball Sampling is the method used in this research work to obtain their knowledge. First of all a content analysis was done on the gathered data, and then based on the purpose of the research which contained opportunities of EHR, they were described & presented through using the subject coding.

3. Results

Based on the comments made by interviewees the researcher divided Challenges into two subcategories of Infrastructure and Structure.

The following table shows the findings of EHR Challenges and its subcategories:

Table 1: Challenges of introduction and implementation of EHR

Interviewees	Infrastructure	Challenges
Physicians	Lack of users' training Weakness of relationship between doctors and patients	Structure Limitation of digital signature No suitable format for data entry Non-effective services for data retrieval and edit
Managers	Costs of EHR systems Lack of common language between designers and users No acceptance of EHR by many users No expert staff for supporting and maintenance of the system	Lack of financial supporting for implementation of EHR Legal restrictions of EHR No readiness for data interchange among organizations
Clear-sighted persons	Costs of software and hardware Costs of buying EDI standards Restriction for using the Oracle Low speed of existence information and communication switches	Lack of management of entered data No possibility for external users of EHR No attention to integration data from birth to death

Generally infrastructure challenges have been divided into four categories :

1. *IT-related problems includes:*

- cost of hardware
- Cost of software
- Poor communication standards and requirements
- Applied system software weaknesses

Proposed guidelines to face the challenges associated with information technology from the perspective of interviewees include:

- a. Switch designed for high-volume data transmission such as video data
- b. Databases for normalizing data
- c. Using SQL server 2008
- d. Replace the waterfall model with a cycle model

- e. Use the time limit online access to records
- f. Correct defects existing HIS
- g. Determine the exact procedures to work on basic layers such as data warehousing or data mining

2. Lack of uniform definitions and concepts and no common language between designers, users and custodians
Proposed guidelines to face the challenges resulting from lack of uniform definitions and concepts of electronic health records from the views of interviewees include:

- a. Involving trade unions about such insurance, radiology, and etc.
- b. Defined localization of EHR
- c. Standardization of data in order to harvest all the same
- d. V & V (Verification and Validity) of Information

3. Cultural problems includes:

- Rejection by some users
- Weakness of relationship between physician and patient

Proposed guidelines to face the challenges related to cultural problems from the perspective of managers are:

- a. Describe EHR benefits to public
- b. Advertise through the media about EHR
- c. Motivate organizations to adopt EHR
- d. Identify users' perceptions about EHR
- e. Improving EHR through training

4. Lack of needs assessment due to :

- Unsuitable platform for implementing electronic health records
- gap between administrative and clinical needs

Proposed guidelines to face the challenges resulting from the lack of needs assessment from the perspective of interviewees include:

- a. Identify and define information needs of patients, healthcare providers and other customers
- b. Exploratory studies in order to implement EHR
- c. Meetings with managers of organizations before implementing EHR

Also structural challenges that the researcher has divided into three sections:

1. Instability enforcement due to:

- lack of transparency, responsibility, preserve and promote electronic health records
- competent organs of poor funding

Proposed guidelines to face the challenges resulting from the lack of consistency in enforcement from the perspective of interviewees include:

- a. Create subspecialty committees as subcommittee of EHR Strategic Committee
- b. Funding by the private sectors
- c. Create a ministry or organization as a national trust with interactive EHR and related ministries
- d. Governmental support to run the EHR
- e. Participation of the Ministry of Health as the main custodian and telecommunications centre as a supporting organization

2. Legal and privacy violations due to:

- possible compromise to privacy and confidentiality
- lack of acceptance in the judicial and legal cases

Proposed guidelines to face the challenges related to data privacy violations from the perspective of interviewees include:

- a. Create master card for users
- b. Create special password for patients
- c. Determine access levels for authorized users

3. Lack of integration and sharing of enterprise-level such as:

- restrictions on the use of patient information in outside of hospital
 - lack of integrity and non electronic health records projects in the province
- Proposed guidelines to face the challenges associated with lack of integration and sharing across organizational learn the views of managers is:
- Networking and linking healthcare organizations in the province

4. Conclusion

According to the point of views of interviews , the challenges of the implementation of EHR can be divided into two categories : Infrastructure and structure such as :information technology problems , lack of need assessment , cultural problems , high software and hardware cost and non-adjustment data interchange standards . Other studies in this area are as follows:

Seven key findings emerged: users perceived the decision to adopt the electronic medical record system as flawed; software design problems increased resistance; the system reduced doctors' productivity, especially during initial implementation, which fuelled resistance; the system required clarification of clinical roles and responsibilities, which was traumatic for some individuals; a cooperative culture created trade-offs at varying points in the implementation; no single leadership style was optimal—a participatory, consensus-building style may lead to more effective adoption decisions, whereas decisive leadership could help resolve barriers and resistance during implementation; the process fostered a counter climate of conflict, which was resolved by withdrawal of the initial system[4].

EMRs are very difficult to construct because the existing electronic data sources, e.g., laboratory systems, pharmacy systems, and physician dictation systems, reside on many isolated islands with differing structures, differing levels of granularity, and different code systems. To accelerate EMR deployment we need to focus on the interfaces instead of the EMR system. We have the interface solutions in the form of standards: IP, HL7 / ASTM, DICOM, LOINC, SNOMED, and others developed by the medical informatics community. We just have to embrace them. One remaining problem is the efficient capture of physician information in a coded form. Research is still needed to solve this last problem.

The standards needed to transport patient data from one system to another inexpensively are in place. With these standards we can solve many of the problems and create a first-stage medical record system from the extensive medical data that already exist in systems such as laboratory, pharmacy, dictation, scheduling, EKG cart, and case abstract systems.

Standard mechanisms for communicating over networks in a secure fashion exist, as do standards for delivering structured medical record content like patient registry records, orders, test results, and standard identifiers for coding many (but not yet all) of the concepts we want to report in the fields of such structured records.

The message standards do not specify the choice of codes for many fields. They do provide a mechanism for identifying the code system for every transmitted code. This pluralistic strategy was the only alternative in the past because universal code systems did not exist for important topics such as laboratory tests and clinical measurements; so institutions used their own local codes. Fortunately, universal code systems are now available for subject matter such as units of measure (ISO⁺²¹), laboratory observations (LOINC²²), common clinical measurements (LOINC), drug entities (NDC²³), device classifications (UMDNS²⁴), organism names, topology, symptoms and pathology (SNOMED,²⁵ IUPAC²⁶), and outcomes variables (HOF²⁷). Even better, most are available without cost. So, for at least some source systems, we have all of the pieces needed for creating EMRs inexpensively from multiple independent sources, inside and outside of a health care organization[5].

One-third (35%) believed that the EHR improved overall quality of care, with many (39%) feeling that it decreased the quality of the patient–doctor interaction [6].

Information technology offers many potential advantages over paper for the storage and retrieval of patients' data. Enthusiasts predict that soon all records will be stored and viewed on computer, but others are more sceptical. The

failure of some computer-based records may be due to poor information design. This paper explores how computers broaden the range of design options but points out that more attention to design is required for computer-based than for paper-based records[7].

The Challenges of electronic health records infrastructure related to information technology, lack of uniform definitions and concepts, cultural problems, and lack needs assessment before implementation and the challenges of structural instability enforced, violations of privacy and legal cases, compromise getting information management, and lack of integration and sharing of enterprise-level call to separation. Overall study results indicate:

* Although electronic health records provides many opportunities for health systems but there are many challenges in the way that it has the adverse effects of quality of EHR implementation and should be put through the implementation of strategies, including strategies presented in this study.

* According to the research, often hardware and software engineers have been more fully than others have touched the practical challenges and offering solutions and therefore must have key role in Executive Committees of electronic health records.

* Although most users of electronic health records are physicians, but have presented minimal comments about challenges and shortcomings and if res it resulted from

their weak roles in introducing and implementation of electronic health records will follow harmful results.

* Based on the present findings should pave the executable file, e-health challenges by improving information technology, electronic health records defined localization, development and promotion of culture of electronic health records, needs assessment and review requirements for implementing electronic health records, warranties established administrative and financial support of electronic health records vendors, supporting the principle of confidentiality of information, improving information management through electronic health records, and facilitate information integration of patients in different health systems.

* Electronic health records check in other leading countries in this area shows that implementation of this system requires a strategic and an executive committee but this research study shows unfortunately necessary attention in this regard has been taken.

Practical suggestions

- Strategic and executive committee prior to electronic health records project
- Customer needs assessment of electronic health records
- Solving the challenges of infrastructure prior to implementing electronic health records

Acknowledgements

The authors would like to thank the Isfahan University of Medical Sciences for supporting to do this study and the managers and physicians who participated in this research project as interviewees.

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